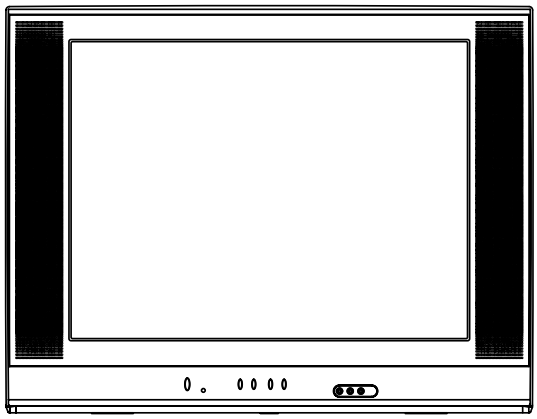
SERVICE MANUAL

COLOR TELEVISION RECEIVER

DTV2784



All the specifications and features are subject to change without notice.

ORIGINAL
VERSION (A)

S/M CODE NO. M3W4062ASM
DATE OF ISSUE 02/2006

IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

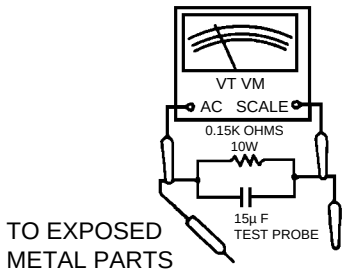
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

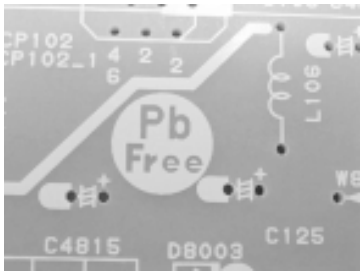
If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF printing on the PCB.
(Please refer to figures.)



Caution:

- Pb free solder has a higher melting point than standard solder;
  Typically the melting point is 86°F~104°F(30°C~40°C) higher.
  Please use a soldering iron with temperature control and adjust it to 650°F ± 20°F (350°C ± 10°C).
  In case of using high temperature soldering iron, please be careful not to heat too long.
- Pb free solder will tend to splash when heated too high (about 1100°F/ 600°C).
- All products with the printed circuit board with PbF printing must be serviced with lead free solder.
  When soldering or unsoldering, completely remove all of the solder from the pins or solder area,
  and be sure to heat the soldering points with the lead free solder until it melts sufficiently.

Recommendations

Recommended lead free solder composition is Sn-3.0Ag-0.5Cu.

TABLE OF CONTENTS

GENERAL SPECIFICATIONS

G-1	TV SYSTEM	CRT	CRT Size / Visual Size		27 inch / 676.0mmV
			CRT Type		Normal
			Magnetic Field BV/BH		+0.45G/0.18G
		Color System			NTSC
		Speaker			2Speaker
			Position		Front
			Size		2.0 x 3.5 Inch
			Impedance		8 ohm
		Sound Output	MAX		1.0 + 1.0 W
			10%(Typical)		- W
		NTSC3.58+4.43 /PAL60Hz			No
G-2	Tuning System	Broadcasting System	Analog		US System M
			Digital		ATSC(8VSB), QAM
		Tuner and	System		1Tuner
		Receive CH	Destination		USA(W/ CATV)
			CH Coverage		2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate	Digital		44.00MHz
		Frequency	Analog	Picture(FP)	45.75MHz
				Sound(FS)	41.25MHz
				FP-FS	4.50MHz
		Preset CH			No
		Stereo/Dual TV Sound			Yes
		Tuner Sound Muting			Yes
G-3	Power	Power Source	AC		120V AC 60Hz
			DC		
		Power Consumption		at AC	
				27"	110 W at AC 120 V 60 Hz
			Stand by (at AC)		3 W at AC 120 V 60 Hz
			Per Year		-- kWh/Year
		Protector	Power Fuse		Yes
			Safety Circuit		Yes
			IC Protector(Micro Fuse)		No
G-4	Regulation		Safety		UL
			Radiation		FCC
			X-Radiation		DHHS
G-5	Temperature		Operation		+5°C ~ +40°C
			Storage		-20°C ~ +60°C
G-6	Operating Humidity				Less than 80% RH
G-7	On Screen Display	Menu			Yes
			Menu Type		Icon
		Menu1	Picture		Yes
				Mode(Picture preference)	No
				Contrast	Yes
				Brightness	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
				Color Temperature	No
				Reset	Yes
			Audio		Yes
				MTS	Yes
				Bass	No
				Treble	No
				Balance	No
				BBE	No
				Stable Sound	No
				Speakers On/Off	No
				Audio Language	Yes
				Digital Output (PCM/Dolby Digital)	Yes
				Surround	No
				Reset	Yes
			Setup		Yes
				Language	Yes
				Clock Set	Yes
				TV/CABLE	Yes
				Auto CH Memory	Yes
				Add/ Delete	Yes
				Closed Caption	Yes
				CC Advanced (Size, Type, Edge, Color, Background Color)	Yes
				Signal Meter	Yes
			Option		Yes
				On/Off Timer	Yes

GENERAL SPECIFICATIONS

				Favorite CH	No
				CH Label	Yes
				Video Label	No
			Locks		Yes
				Password	Yes
				V-Chip	Yes
				Video Lock	Yes
				CH Lock	Yes
				Game Timer	No
				Front. Panel Lock	Yes
			Control Level		Yes
				Volume	Yes
				Contrast	Yes
				Brightness	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
				Bass	No
				Treble	No
				Balance	No
				Signal Meter	Yes
			Stereo, SAP, Mono		Yes
			Video		Yes
			Component		Yes
			Channel(TV/Cable)		Yes
			CH Label		Yes
			Video Label		No
			Clock		Yes
			Game Timer		No
			On/Off Timer		Yes
			Sleep Timer		Yes
			Reset		Yes
			Sound Mute		Yes
			Picture Size		Yes
			V-chip Rating		Yes
G-8	**OSD Language**				English French Spanish
G-9	**Clock and Timer**	Sleep Timer	Max Time		120 Min
			Step		10 Min
		On/Off Timer	Program(On Timer / Off Timer)		Yes
		Timer Back-up (at Power Off Mode) more than			-- Min Sec
G-10	**Remote Control**	Unit			RC-KL
		Glow in Dark Remocon			No
		Format			NEC
		Remocon Format			Orion
		Custom Code			86-05 h
		Power Source	Voltage(D.C)		3V
			UM size x pcs		UM-4 x 2 pcs
		Total Keys			27 Keys
		Keys	Power		Yes
			1		Yes
			2		Yes
			3		Yes
			4		Yes
			5		Yes
			6		Yes
			7		Yes
			8		Yes
			9		Yes
			0		Yes
			100		No
			CH Up		Yes
			CH Down		Yes
			Volume Up		Yes
			Volume Down		Yes
			TV/Caption/Text		Yes
			CH1/CH2		No
			TV/Video(TV/AV)		Yes
			CH RTN/CH ENT(Quick View)		Yes
			Sleep		Yes
			Display(Call) / -		Yes
			Reset		Yes
			Menu		Yes
			Enter		Yes

GENERAL SPECIFICATIONS

			Mute	Yes
			Exit	Yes
			MTS(Audio Select)	Yes
			Set +	No
			Set -	No
			Picture Size	Yes
		Multi Brand Keys	CH Up(VCR)	No
			CH Down(VCR)	No
			Pause/Still	No
			TV/VCR(VCR)	No
			CH Enter	No
			Code Set (Code)	No
			FF	No
			Rew	No
			Rec	No
			Play	No
			Stop	No
			TV	No
			VCR	No
			Cable	No
G-11	**Features**	Auto Degauss		Yes
		Auto Shut Off		Yes
		Canal+		No
		Cable(CATV)		Yes
		Anti-theft		No
		Rental		No
		Memory(Last CH)		Yes
		Memory(Last Volume)		Yes
		V-Chip (Analog & Digital)		Yes
			Type	USA, ORION Type
		BBE		No
		Auto Search		No
		CH Allocation		No
		SAP		Yes
		Tone Control		No
		Just Clock Function		No
		Game Position		No
		CH Label		Yes
		VM Circuit		No
		Full OSD		No
		Premiere		No
		Comb Filter		No
				Lines
		Auto CH Memory		Yes
		Hotel Lock		No
		Closed Caption (Analog & Digital)		Yes
		CC Advance		Yes
		Stable Sound		No
		Surround		No
		CH Lock		Yes
		Video Lock		Yes
		Game Timer (Max Time:120 Min)		No
		Energy Star		No
		Power On Memory		Yes
		Favorite CH		No
		FBT Leak Test Protect		No
		Mode(Picture Preference)		No
		Variable Audio Out		No
		Front Panel Lock		Yes
		QAM		Yes
		Digital Out	Dolby Digital	Yes
			MPEG	No
			PCM	Yes
			DTS	No
		Zoom		Yes
G-12	**Accessories**	Owner's Manual	Language	English / Spanish
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	
			Terminal	
		Loop Antenna		No
			Terminal	
		U/V Mixer		No

GENERAL SPECIFICATIONS

		DC Car Cord (Center+)			No
		Guarantee Card			No
		Warning Sheet			No
		Circuit Diagram			No
		Antenna Change Plug			No
		Service Facility List			No
		Important Safeguard			No
		Dew/AHC Caution Sheet			No
		AC Plug Adapter			No
		Quick Set-up Sheet			No
		Battery			**Yes**
				UM-4 x 2pcs	
				OEM Brand	No
		AC Cord			No
		AV Cord (2Pin-1Pin)			No
		Registration Card			No
		Information Sheet			No
		PTB Sheet			No
		300 ohm to 75 ohm Antenna Adapter			No
		Information Sheet(Return)			Yes
G-13	**Interface**	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	No
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input = VIDEO2	RCA
				Audio Input = VIDEO2	RCA x 2 (L/MONO,R)
				Other Terminal	No
			Rear	Video Input(Rear1) = VIDEO1	RCA
				Video Input(Rear2)	No
				Audio Input(Rear1) = VIDEO1	RCA x 2 (L/MONO,R)
				Audio Input(Rear2)	No
				Video Output	No
				Audio Output	No
				S-Input	Yes
				Component Input2(w/ Analog Audio L/R)	RCA x 5
				Digital Audio Out	Coaxial x 1
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
				AC Outlet	No
G-14	**Set Size**			Approx. W x D x H (mm)	740 x 489.5 x 571.5
G-15	**Weight**			Net (Approx.)	35kg (77.2 lbs)
				Gross (Approx.)	38Kg (83.8 lbs)
G-16	**Carton**	Master Carton			No
				Content	---- Sets
				Material	-- /--
				Dimensions W x D x H(mm)	-- x -- x --
				Description of Origin	No
			Gift Box	Material	Double/White W/Photo Label
				Dimensions W x D x H(mm)	850 x 575 x 665
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	31
				Container Stuffing	192 Sets/40' container
G-17	**Material**	Cabinet		Cabinet Front	PS 94V0 DECABROM
				Cabinet Rear	PS 94V0 DECABROM
		PCB		Non-Halogen Demand	No
				Eyelet Demand	No
G-18	**Environment**	Environmental standard requirement (by buyer)			Green procurement of ORION
		Pb-free			Phase3(Phase3A)

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated screwdriver, touch the support of the Anode with the tip of the screwdriver.
   A cracking noise will be heard as the voltage is discharged.

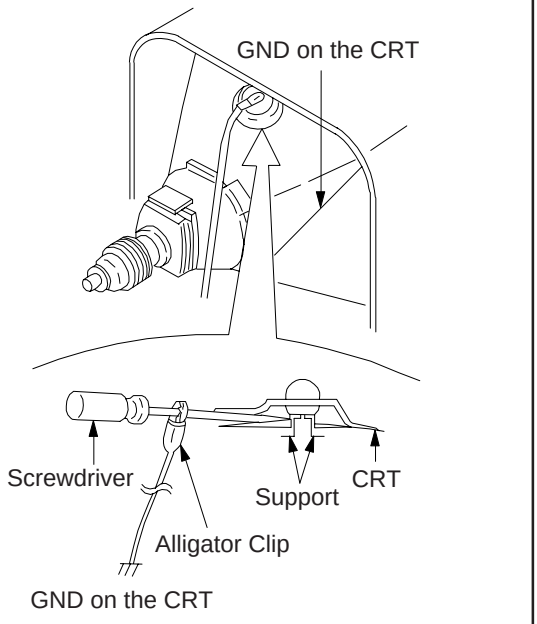


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

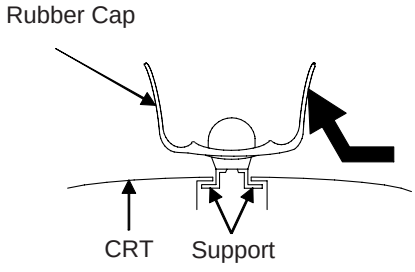


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

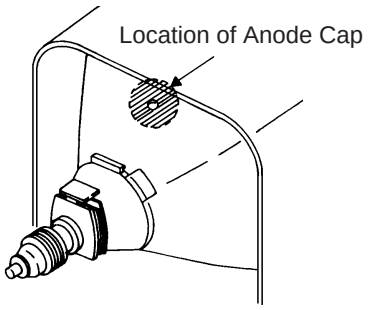


Fig. 1-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

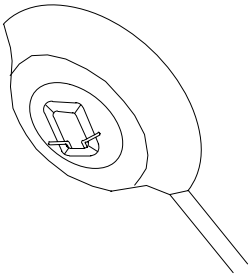


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 1-5**.

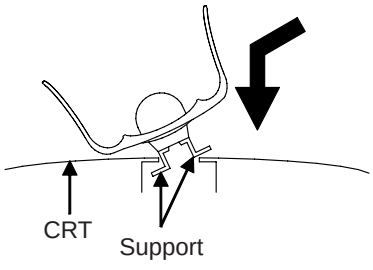


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 2-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

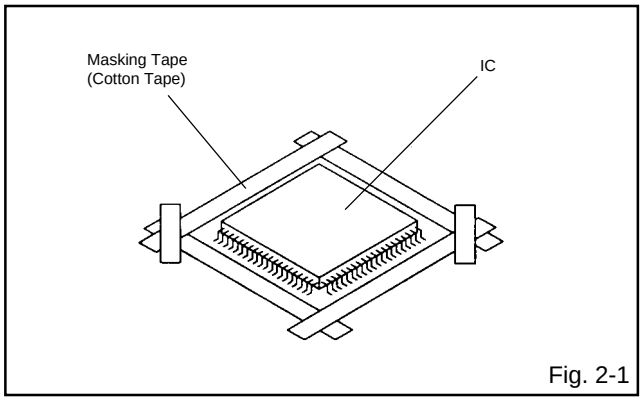


Fig. 2-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 2-2.)**

   NOTE

   Do not rotate or move the IC back and forth until IC can move back and forth easily after desoldering the leads completely.

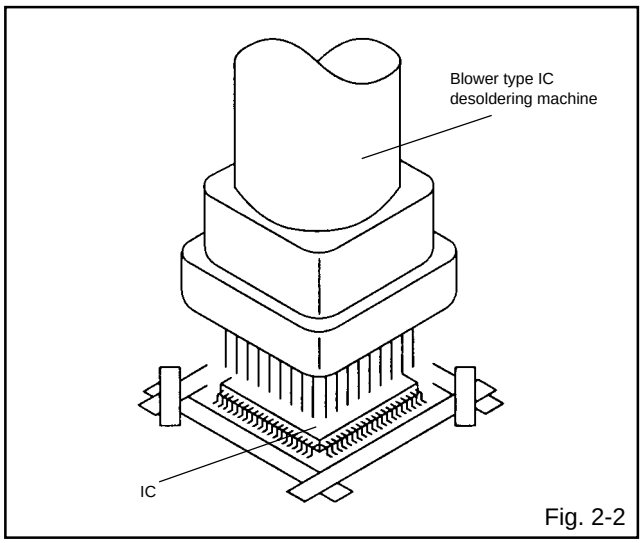


Fig. 2-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 2-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

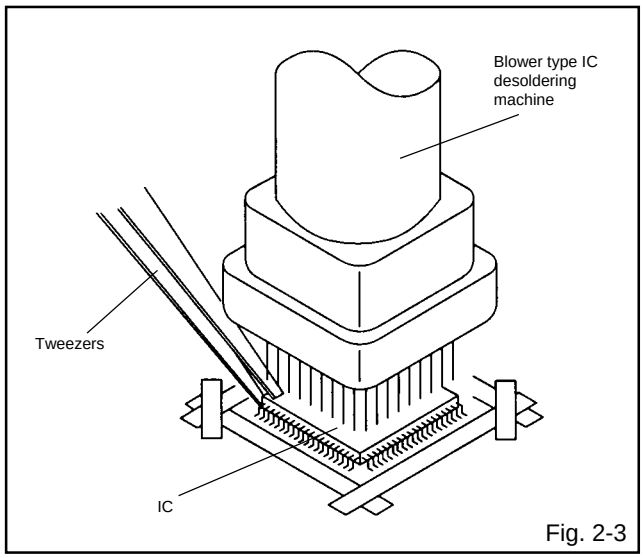


Fig. 2-3

4. Peel off the Masking Tape.

5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

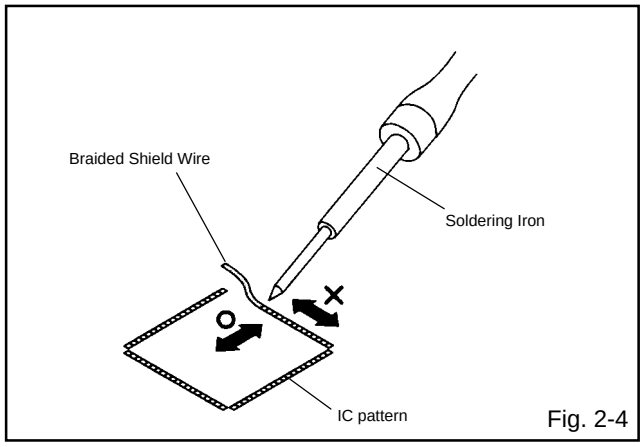


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 2-5.)**

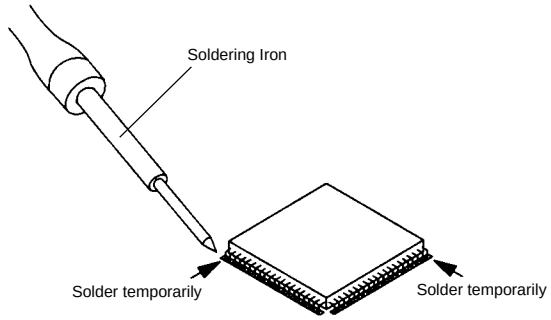


Fig. 2-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 2-6.)**

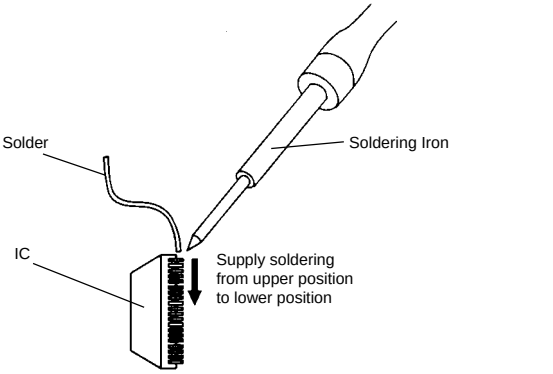


Fig. 2-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 2-7.)**

   NOTE

   Do not absorb the solder to excess.

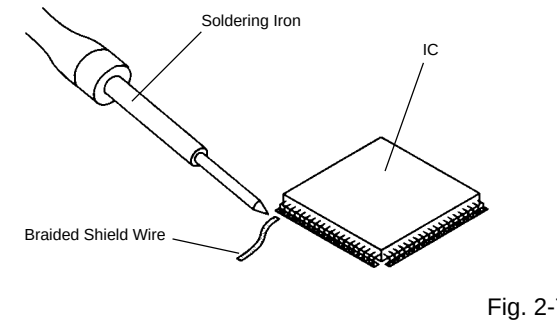


Fig. 2-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 2-8.)**

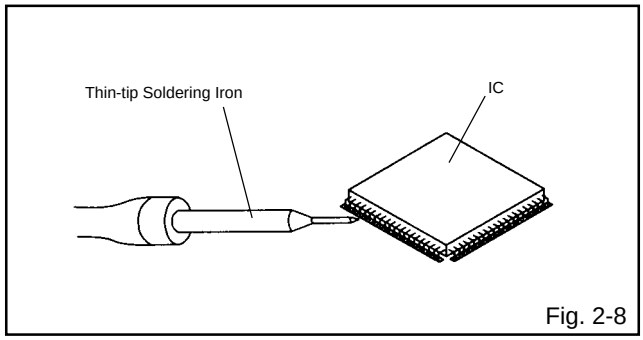


Fig. 2-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

This unit is provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 2 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of factory data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	8	Check of the SUM DATA and MICON VERSION on the screen. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	6	Check for the firmware version. Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

WHEN REPLACING EEPROM (MEMORY) IC

CONFIRMATION OF CHECK SUM, POWER ON TOTAL HOURS, MICON VERSION AND DIGITAL TV MICON FIRMWARE VERSION

Initial total of MEMORY IC, POWER ON total hours, MICON VERSION and Digital TV MICON Firmware VERSION can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".
Please refer to "CONFIRMATION OF INITIAL DATA" when SUM DATA is not corresponding.

1. Turn on the POWER, and set to the TV mode.
2. Set the VOLUME to minimum.
3. Press both VOL. DOWN button on the set and Channel button **(8)** on the remote control for more than 2 seconds.
4. After the confirmation of each check sum, power on total hours, micon version and Digital TV MICON Firmware version, turn off the power.

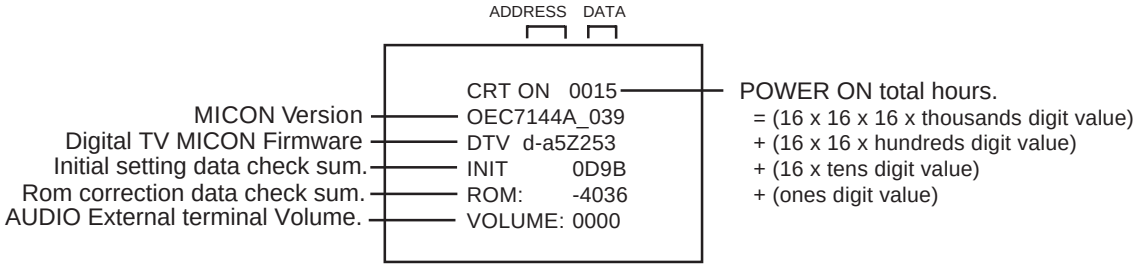


FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	C1	A2	4D	1A	22	00	02	00	00	80	10	00	30	36	03	00
10	68	00	00	00	00	00	00	00	00	00	18	07	00	05	AA	00
20	79	00	00	73	00	00	00	00	00	00	00	00	00	00	00	00
30	70	B0	06	01	03	04	20	02	01	00	D0	02	B1	10	00	00
40	00	00	00	00	00	00	00	80	80	80	00	40	40	00	00	00
50	00	00	00	00	1E	00	0C	00	45	00	02	00	02	80	00	C0
60	00	00	00	00	00	84	00	00	C2	04	01	00	00	01	02	00
70	00	00	00	14	07	00	63	2F	00	00	00	00	00	00	00	00
80	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
90	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F0	00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1

CONFIRMATION OF INITIAL DATA

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press RIGHT/LEFT button to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using UP/DOWN button until required DATA value has been selected.
6. Pressing RIGHT/LEFT button will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

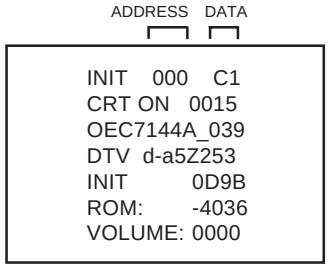
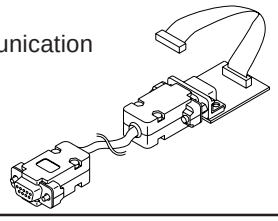
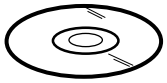
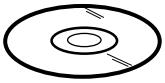


FIG. 1

RE-WRITE FOR DIGITAL SOFT FIRMWARE

JG198 Serial Communication Change JIG 	JG199 Flash UP-Date Soft Disc 	JG176 USA SD DTV ROM DISC 

Ref. No.	Part No.	Parts Name	Remarks
JG198	APJG198000	Serial Communication Change JIG	Connect the set to personal computer
JG199	APJG199000	Flash UP-Date Soft Disc	Up-Date of the Firmware
JG176	APJG176093	USA SD DTV ROM DISC	Up-Date of the Firmware

1. Confirm that the AC cord is plugged out.
2. Using the Serial Communication Change JIG **(JG198)**, connect the set to personal computer. **(Refer to Fig. 1)**
   NOTE: It is possible to write only with the personal computer of WINDOWS.

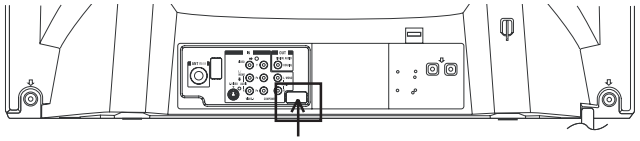


Fig. 1

3. Using the Flash UP-Date Soft Disc **(JG199)** and USA SD DTV ROM DISC**(JG176)**, please Re-write the DIGITAL SOFT FIRMWARE.
   The operating manual for Re-writing is included in Flash UP-Date Soft Disc **(JG199)**.

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease **(YG6260M)** , remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

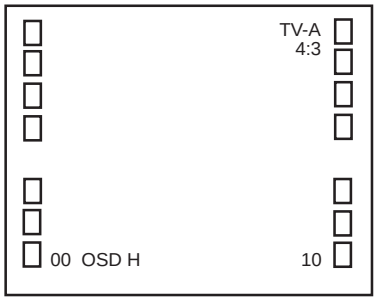


Fig. 1-1

2. Use the VOL. UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.
4. To display the adjustment screen for AV, CS and DIGITAL mode, press the TV/VIDEO button on the remote control to set to the AV, CS and DIGITAL mode. Press the VOL.DOWN button on the set and the channel **(9)** on the remote control for more than 2 seconds.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	20	CONT.CENT
01	OSD C	21	CONT.MAX
02	CUT OFF	22	CONT.MIN
03	H.POSI	23	COL.CENT
04	H BLK L	24	COL.MAX
05	H BLK R	25	COL.MIN
06	V. SIZE	26	TINT CENT
07	V POSI	27	SHARP.CENT
08	V.LIN	28	SHARP.MAX
09	VS CORR	29	SHARP.MIN
10	V COMP	30	SUB BIAS
11	R.BIAS	31	H.SIZE
12	G.BIAS	32	PARABOLA
13	B.BIAS	33	TRAPEZIUM
14	R.DRV	34	COR TOP
15	G.DRV	35	COR BTM
16	B.DRV	36	TEST STEREO
17	BRI.CENT	37	TEST AUDIO
18	BRI.MAX	38	H FREQ
19	BRI.MIN		

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set in AV MODE without signal.
2. Connect the digital voltmeter to the **TP003**.
3. Adjust the **VR502** until the digital voltmeter is 120 ± 0.5V.

2-2: CUT OFF

1. Place the set in Aging Test for more than 15 minutes.
2. Place the set in AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set in Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(11)** on the remote control to select "R.BIAS".
5. Using the CH. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the VOL. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the CH. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is achieved.

ELECTRICAL ADJUSTMENTS

2-5: BRIGHT CENT

1. Receive the monoscope pattern. (RF Input)
2. Set the screen mode to FULL.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRI CENT".
5. Press the CH. UP/DOWN button on the remote control until the white 2.7% is starting to be visible
6. Receive the monoscope pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Receive the monoscope pattern.
9. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~5.

2-6: CONTRAST MAX

1. Receive an over 70dB color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "CONT.MAX".
4. Press the CH. UP/DOWN button on the remote control until the contrast step No. becomes "100".
5. Receive a broadcast and check if the picture is normal.
6. Receive the color bar pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Receive a broadcast and check if the picture is normal. Receive the monoscope pattern.
9. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~5.

2-7: TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "TINT".
5. Press the CH. UP/DOWN button on the remote control until the section A becomes as straight line. **(Refer to Fig. 2-1)**
6. Receive the color bar pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Receive the color bar pattern.
9. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~5.
10. Receive the digital color bar pattern.
11. Press the TV/VIDEO button on the remote control to set to the DIGITAL mode.Then perform the above adjustments 2~5.

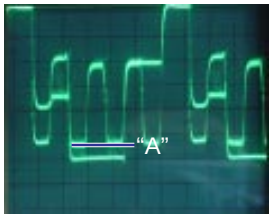


Fig. 2-1

2-8: COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COL.CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the CH. UP/DOWN button on the remote control until the red color level is adjusted to 110 ± 5% of the white level. **(Refer to Fig. 2-2)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the AV mode. Then perform the above adjustments 2~6.
9. Receive the color bar pattern.
10. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~6.
11. Receive the digital color bar pattern.
12. Press the TV/VIDEO button on the remote control to set to the DIGITAL mode.Then perform the above adjustments 2~6.

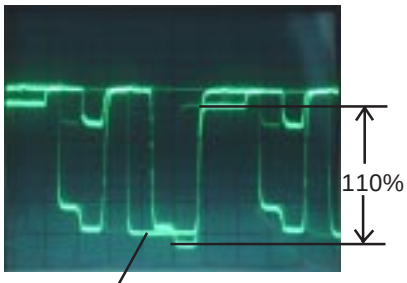


Fig. 2-2

2-9: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to selec "H.POSI".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

ELECTRICAL ADJUSTMENTS

2-10: HORIZONTAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "H.SIZE".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on the right and left becomes 8± 3%.

2-11: VERTICAL LINEARITY

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness, contrast, to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "V.LIN".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-12: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.
   (Refer to Fig. 2-3)

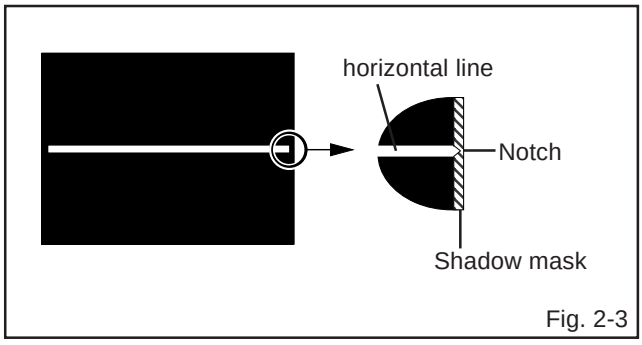


Fig. 2-3

2-13: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V. SIZE".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes 9 ± 2%.

2-14: TRAPEZIUM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select "TRAPEZIUM".
4. Press the CH. UP/DOWN button on the remote control until both ends of the right and left vertical lines of the 4th length lines screen become parallel.

2-15: PALABOLA

1. Receive the crosshatch pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "PALABOLA".
4. Press the CH. UP/DOWN button on the remote control, so that the line becomes straight from the outside of the right and left.

2-16: COR TOP/BTM

1. Receive the crosshatch signal from the Pattern Generator.
2. Set the screen mode to FULL.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select "COR. TOP".
5. Press the CH. UP/DOWN button on the remote control until both ends of the vertical lines become straight.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(35)** on the remote control to select "COR. BTM".
7. Press the CH. UP/DOWN button on the remote control until both ends of the vertical lines of the screen become parallel.

2-17: OSD POSITION

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(00)** on the remote control to select "OSD H".
4. Press the CH. UP/DOWN button on the remote control until the difference of A and B becomes minimum.
   (Refer to Fig. 2-4)

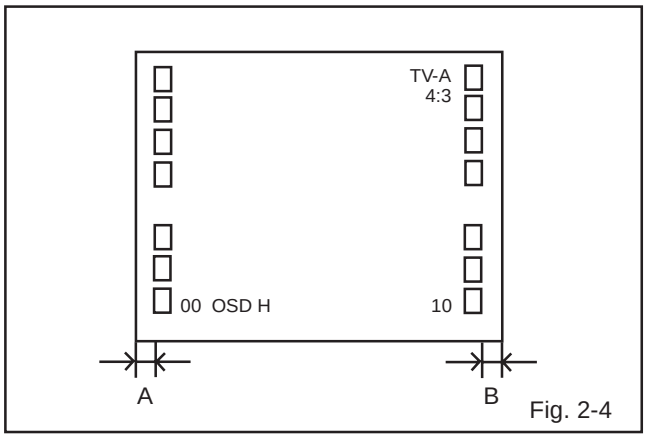


Fig. 2-4

ELECTRICAL ADJUSTMENTS

2-18: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of each adjustment item is set correctly referring below.

NO.	FUNCTION	RF	AV	CS	DIGITAL
1	OSD C	02	02	02	02
4	H BLK L	06	06	06	06
5	H BLK R	02	02	02	02
9	VS CORR	11	11	11	11
10	V COMP	00	00	00	00
18	BRI.MAX	120	120	120	120
19	BRI.MIN	30	30	30	30
20	CONT.CENT	55	50	50	55
22	CONT.MIN	20	20	20	20
24	COL.MAX	120	120	120	120
25	COL.MIN	20	20	20	20
27	SHARP.CENT	35	25	25	25
28	SHARP.MAX	50	40	40	40
29	SHARP.MIN	20	10	10	10
30	SUB BIAS	00	00	00	00
36	TEST STEREO	00	00	00	00
37	TEST AUDIO	00	00	00	00
38	H FREQ	07	07	07	07

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

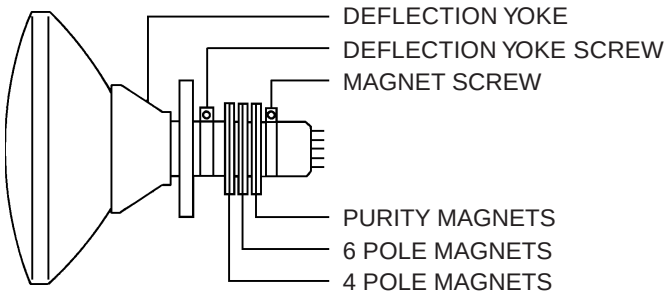


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

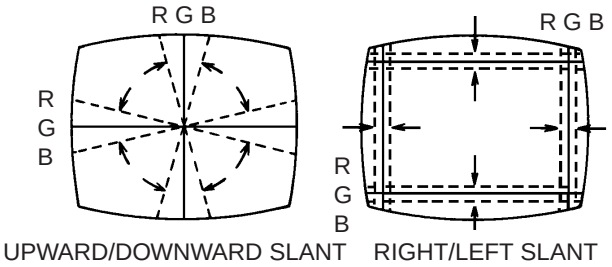
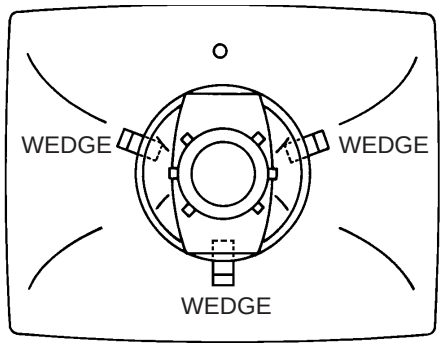


Fig. 3-2-a

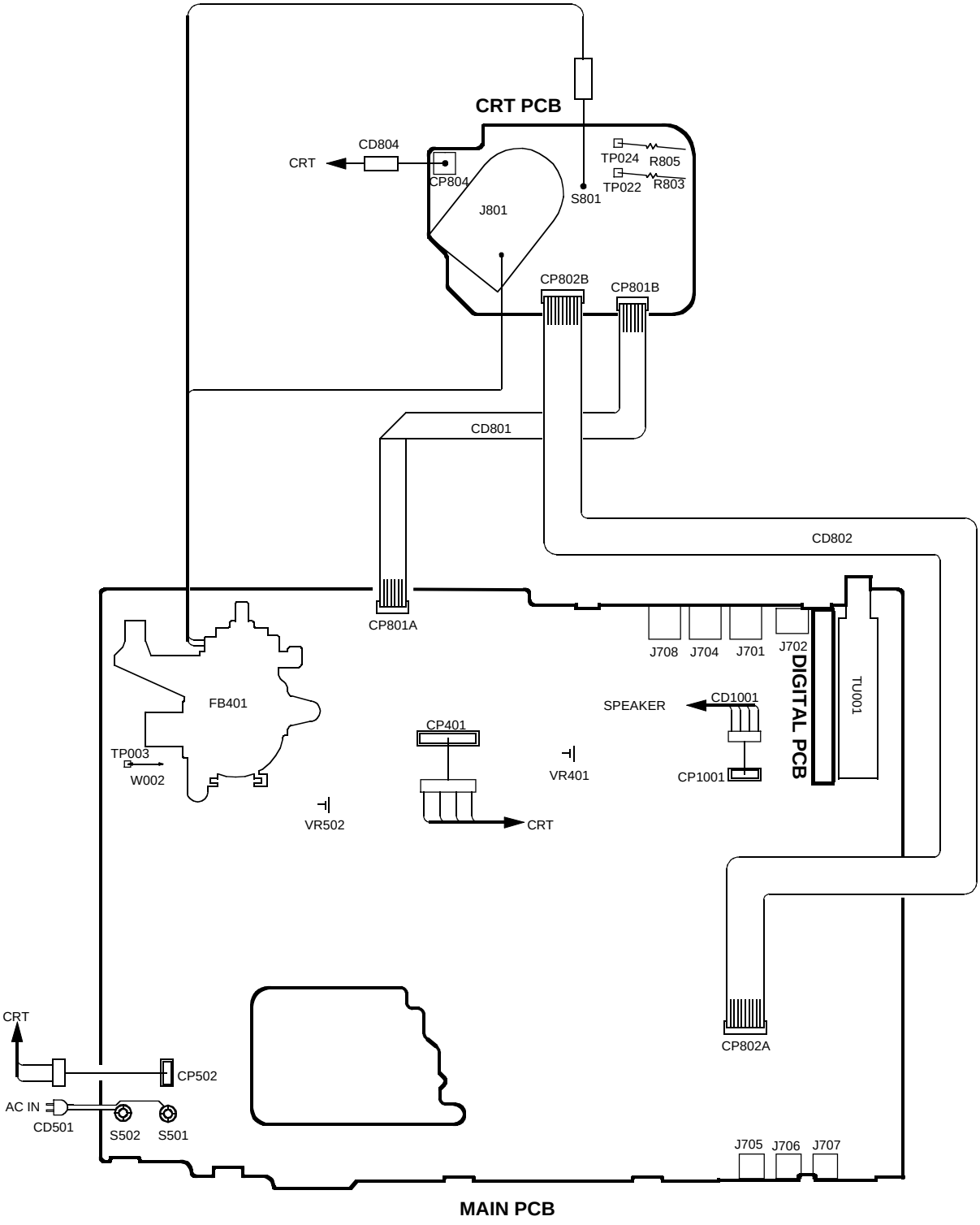


WEDGE POSITION

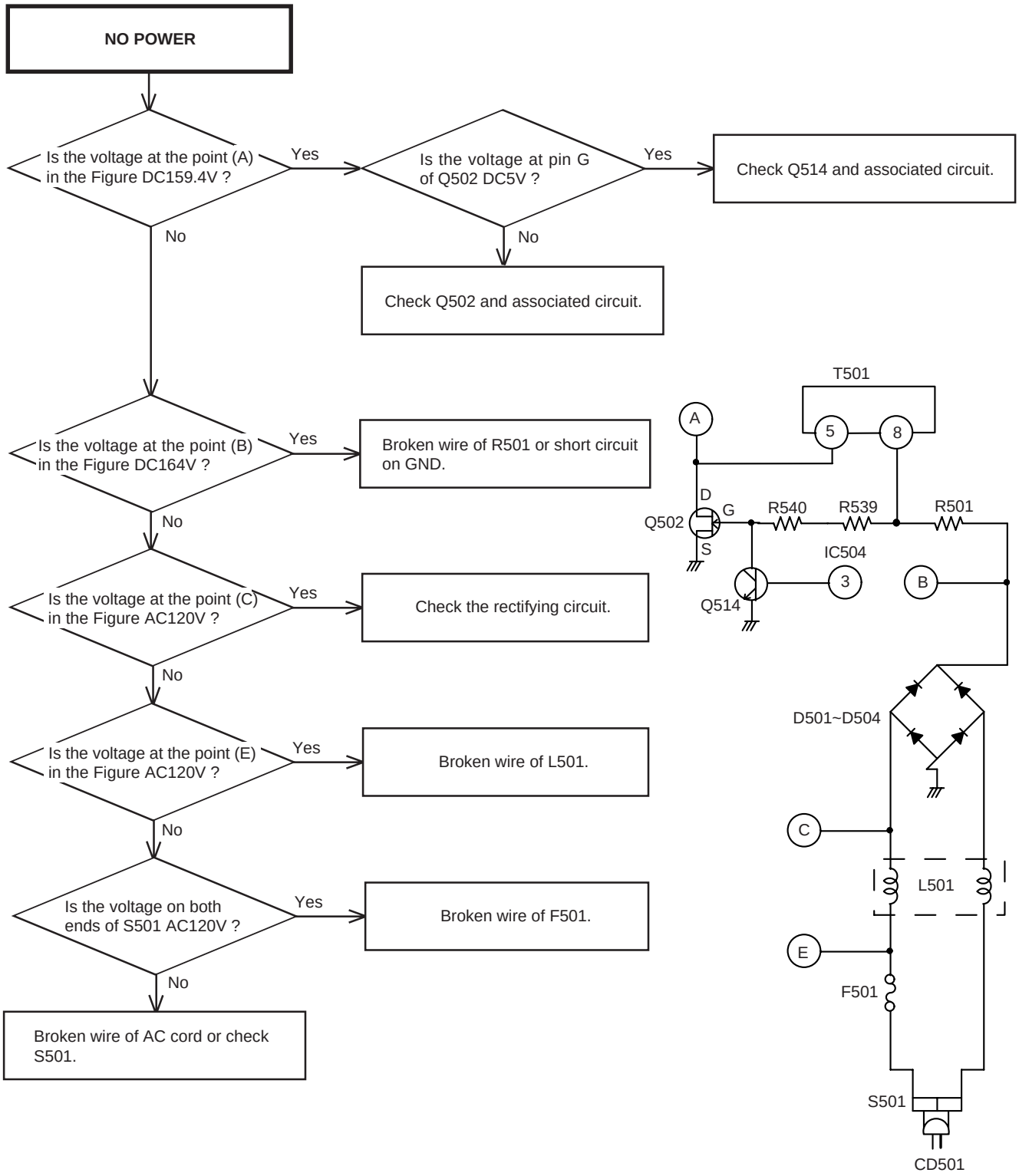
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

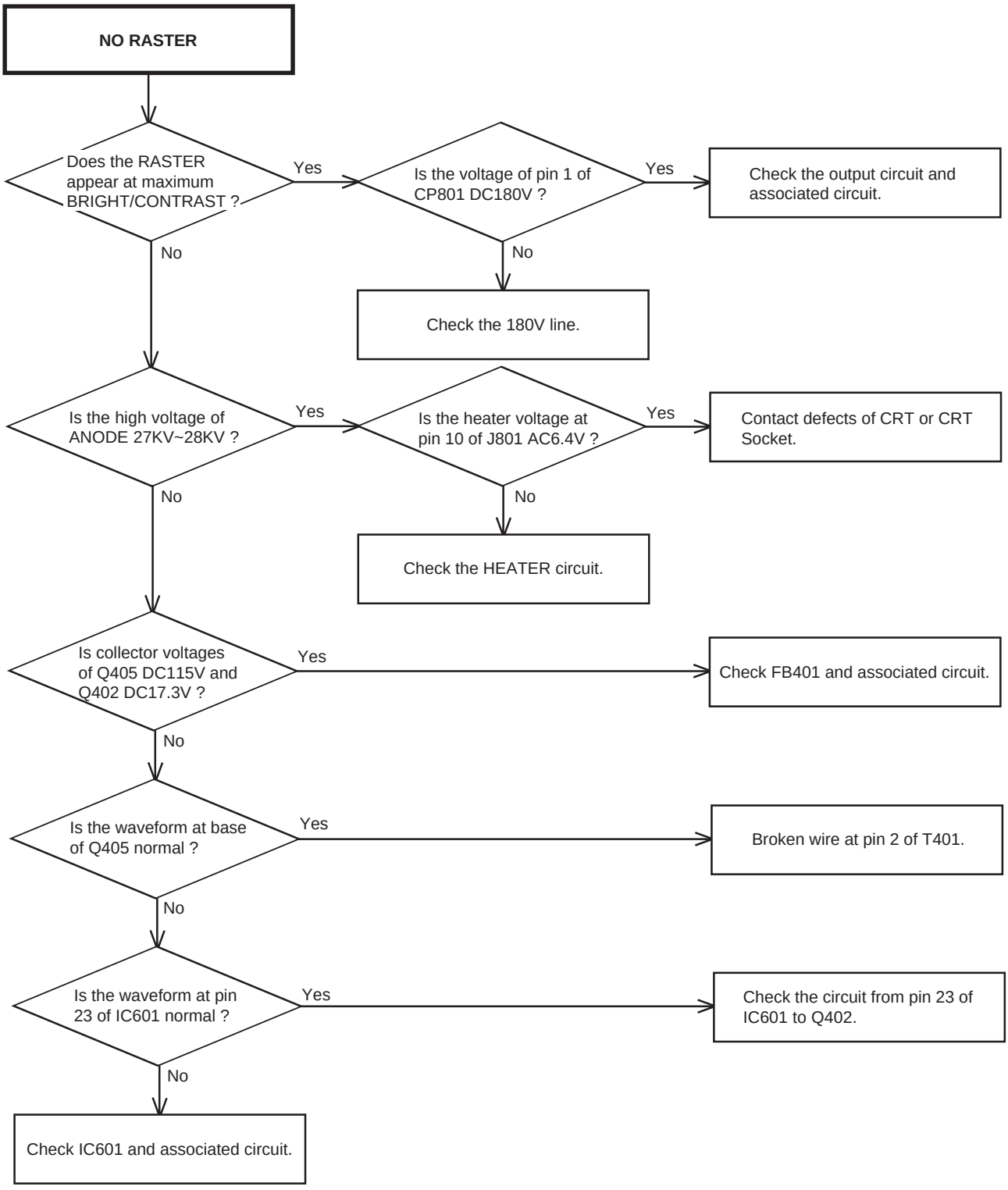
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



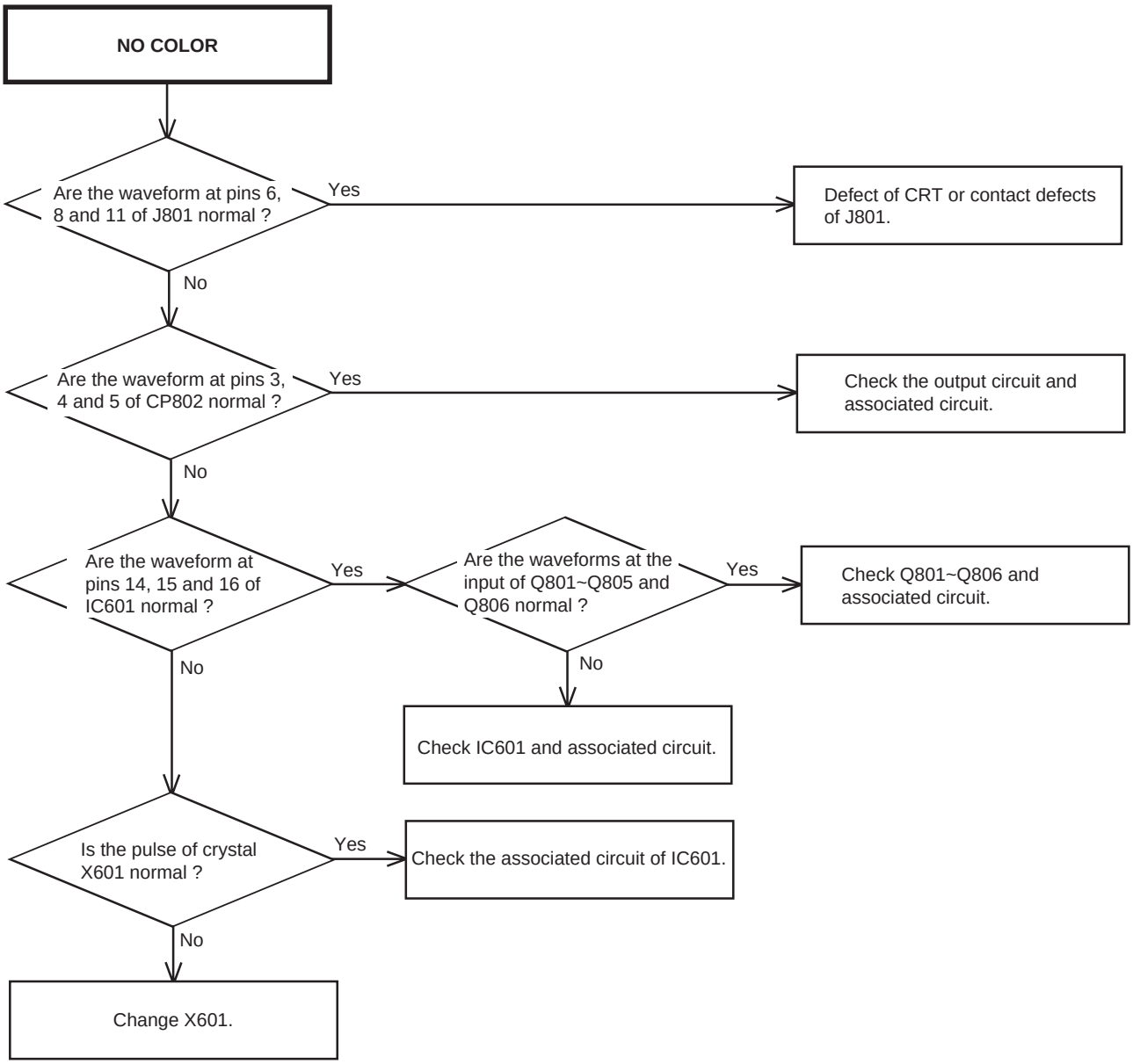
TROUBLESHOOTING GUIDE



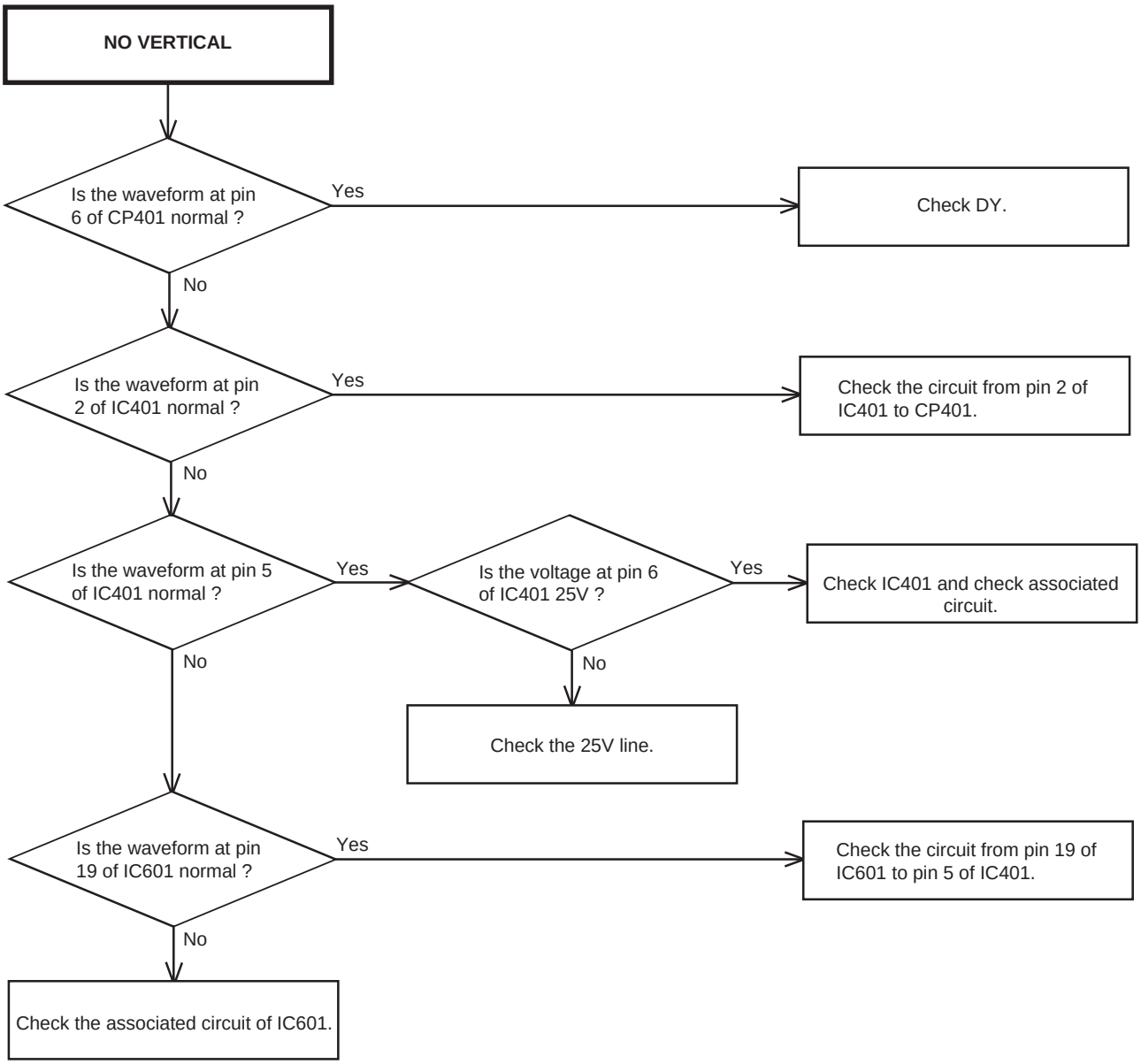
TROUBLESHOOTING GUIDE



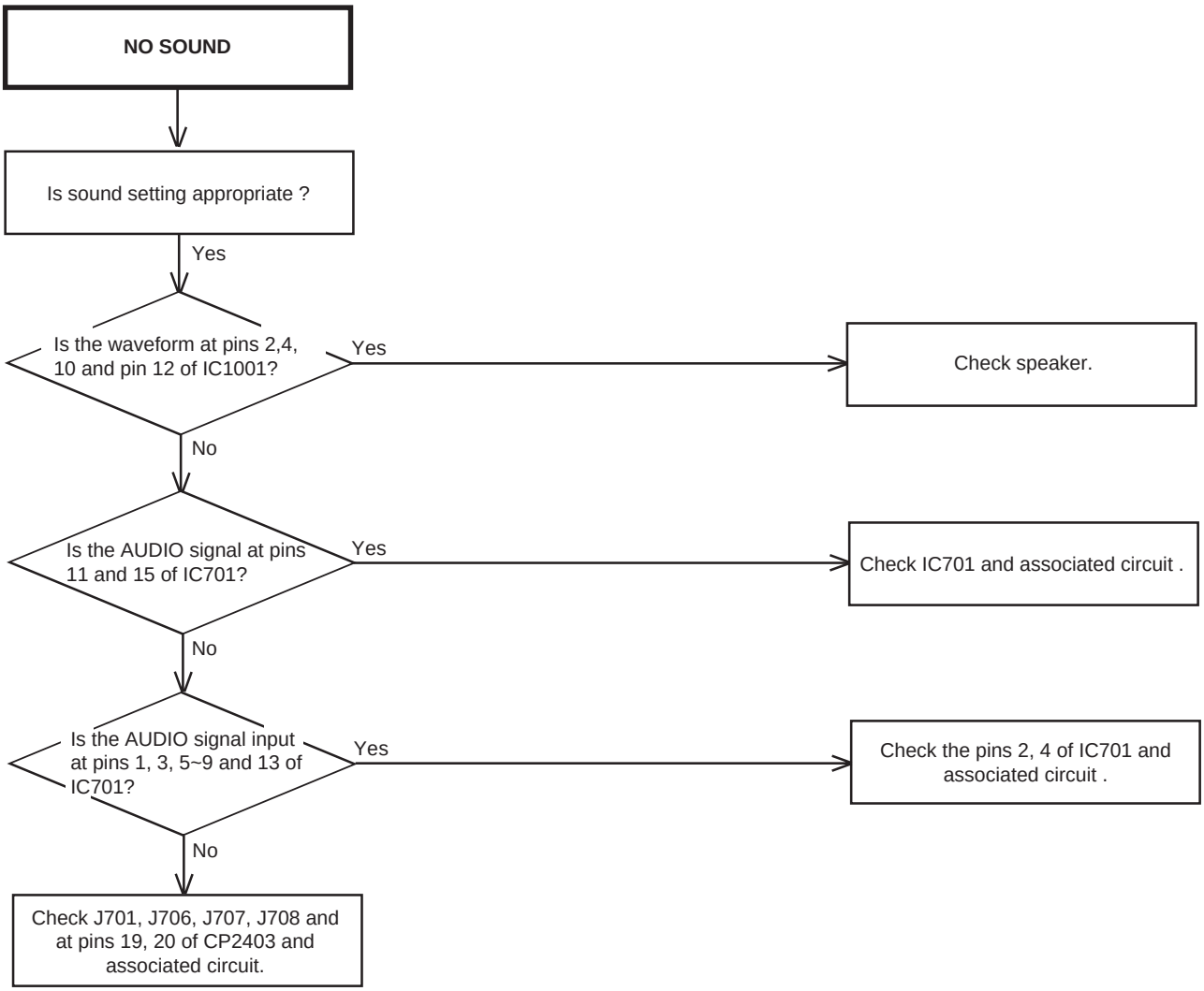
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE



IC DESCRIPTION

OEC7144A (IC101)

No.	Pin name	Symbol	I/O	Logic	Function	Option	When unused
1	VHOLD	V.HOLD_MAIN	I	-	Condenser of slicer.	-	-
2	HLF	HLF_MAIN	I/O	-	Filter of slicer.	-	-
3	P94/SCL3/RxD2	SCL1	O	1	IIC BUS(1) CLOCK output.	C-MOS	-
4	P93/SDA3/TxD2	SDA1	I/O	1	IIC BUS(1) DATA I/O.	C-MOS	-
5	P92/TB2/DIGR0	YUV-H	O	0	SW COMPONENT	C-MOS	OPEN
6	P91/TB1		O	-	Not used.(L output)	C-MOS	OPEN
7	P90/TB0	HSYNC	I	1	SYNC input for SD distinction.	C-MOS	PD
8	BYTE	BYTE	I	-	It connects it with VSS.	-	VSS
9	CNVss	CNVss	I	-	It connects it with VSS. When you write Flash "H"	-	PD
10	P87/XCIN/DIGG0		O	-	Not used.(32KHz IN)	C-MOS	OPEN
11	P86/XCOUT/DIGB0		O	-	Not used.(32KHz OUT)	C-MOS	OPEN
12	RESET	RESET	I	0	RESET input. "L" ---> when Flash is written "H"	-	PU
13	XOUT	Xout	O	-	Main Oscillation.	-	-
14	VSS	VSS	Power supply	-	GND	-	-
15	XIN	Xin	I	-	Main Oscillation.	-	-
16	VCCI	VCC(3.3V)	Power supply	-	3.3V	-	-
17	OSC1/OSCHLF	OSCHLF	I	-	External clock input for OSD.	-	-
18	OSC2		O	-	Not used.(departure pendulum reserve for OSD)	-	OPEN
19	P83/INT1	REMOCON	I	0	REMOCON input.	C-MOS	PU
20	P82/INT0	P.FAIL	I	0	Power failure detection.	C-MOS	PU
21	OUT1	BLANK1	O	1	BLANK output for OSD/CCD(1)	-	-
22	OUT2	BLANK2	O	1	BLANK output for OSD/CCD(2)	-	-
23	P77/HC1		O	-	Not used.	C-MOS	OPEN
24	P76/TA3		O	-	Not used.	C-MOS	OPEN
25	P75/HC0	EXT A MUTE	O	1	Sound Mute for Audio out terminal	C-MOS	OPEN
26	P74/TA2	VOLUME	O	1	PWM output for Audio Volume	C-MOS	OPEN
27	P73/CTS2,RTS2		O	-	Not used.	C-MOS	OPEN
28	P72/SCL2/CLK2	AFT2	O	-	Detect Tuner AFT2 (analog)	C-MOS	OPEN
29	P71/SCL1/RxD2		O	-	Not used.	Nch-OD	OPEN
30	P70/SDA1/TxD2		O	-	Not used.	Nch-OD	OPEN
31	P67/SDA2	AFT1	O	-	Detect Tuner AFT1 (analog)	C-MOS	OPEN
32	R/DIGR1	RED R	O	1	RED output for OSD/CCD.	-	-
33	G/DIGG1	GREEN G	O	1	GREEN output for OSD/CCD.	-	-
34	B/DIGB1	BLUE B	O	1	BLUE output for OSD/CCD.	-	-
35	P63/TxD0	DTV Tx	O	0	Communication of Digital Module	C-MOS	PU
36	P62/RxD0	DTV Rx	I	0	Communication of Digital Module	C-MOS	PU
37	P61/CLK0	(CLK0)	O	-	Not used.	C-MOS	PU
38	P60/CTS0,RTS0	(PRT0)	O	-	Not used.	C-MOS	PU
39	P57,RDY/CLK		O	-	Not used.(L output)	C-MOS	OPEN
40	P56/ALE	DTV RESET	O	0	Reset output of Digital Module	C-MOS	OPEN
41	P55/HOLD		O	-	Not used.	C-MOS	PD
42	P54/HLDA		O	-	Not used.	C-MOS	OPEN
43	P53/BCLK		O	-	Not used.	C-MOS	OPEN
44	P52/RD		O	-	Not used.	C-MOS	OPEN
45	P51/WRH/BHE		O	-	Not used.	C-MOS	OPEN
46	P50/WRL/WR		O	-	Not used.	C-MOS	PU
47	P47/CS3	SD	O	1	Detect Tuner SD (analog)	C-MOS	OPEN

IC DESCRIPTION

OEC7144A (IC101)

No.	Pin name	Symbol	I/O	Logic	Function	Option	When unused
48	P46/CS2		O	-	Not used.	C-MOS	OPEN
49	P45/CS1		O	-	Not used.	C-MOS	OPEN
50	P44/CS0		O	-	Not used.	C-MOS	OPEN
51	P43/A19	AUDIO MUTE	O	1	Volume MUTE output.	C-MOS	OPEN
52	P42/A18		O	-	Not used.	C-MOS	OPEN
53	P41/A17		O	-	Not used.	C-MOS	OPEN
54	P40/A16	VIDEO MUTE	O	1	Image MUTE output.	C-MOS	OPEN
55	P37/A15	EEPROM_SCL	O	1	IIC CLOCK output for EEPROM.	C-MOS	PU
56	P36/A14	EEPROM_SDA	I/O	1	IIC DATA I/O for EEPROM.	C-MOS	PU
57	P35/A13		O	-	Not used.	C-MOS	OPEN
58	P34/A12		O	-	Not used.	C-MOS	OPEN
59	P33/A11		O	-	Not used.	C-MOS	OPEN
60	P32/A10		O	-	Not used.	C-MOS	OPEN
61	P31/A9		O	-	Not used.	C-MOS	OPEN
62	Hsync	HD	I	-	HSYNC input for OSD.	-	-
63	P30/A8		O	-	Not used.	C-MOS	OPEN
64	Vsync	VD	I	-	VSYNC input for OSD.	-	-
65	P27/A7		O	-	Not used.	C-MOS	-
66	P26/A6		O	-	Not used.	C-MOS	OPEN
67	P25/A5		O	-	Not used.	C-MOS	OPEN
68	P24/A4		O	-	Not used.	C-MOS	OPEN
69	P23/A3		O	-	Not used.	C-MOS	OPEN
70	P22/A2		O	-	Not used.	C-MOS	OPEN
71	P21/A1		O	-	Not used.	C-MOS	OPEN
72	P20/A0		O	-	Not used.	C-MOS	OPEN
73	P17/D15		O	-	Not used.	C-MOS	OPEN
74	P16/D14		O	-	Not used.	C-MOS	OPEN
75	P15/D13		O	-	Not used.	C-MOS	OPEN
76	P14/D12		O	-	Not used.	C-MOS	OPEN
77	P13/D11		O	-	Not used.	C-MOS	OPEN
78	P12/D10	S	I	0	S jacks input of distinction input.	C-MOS	PU
79	P11/D9		O	-	Not used.	C-MOS	PU
80	P10/D8		O	-	Not used.	C-MOS	PU
81	P07/D7	TV POWER	O	1	TV POWER control output.	C-MOS	OPEN
82	P06/D6		O	-	Not used.	C-MOS	OPEN
83	P05/D5	DTV POWER	O	1	Power SW of Digital Module	C-MOS	OPEN
84	P04/D4	STAND BY-L	O	0	SUB power supply control terminal.	C-MOS	OPEN
85	P03/D3	DEGAUSS	O	1	Degauss control output	C-MOS	OPEN
86	P02/D2	IIC_OFF	I	0	IIC BUS STOP input for adjustment.	C-MOS	PU
87	P01/D1	PROTECT	O	1	Control H Pulse	C-MOS	PU
88	P00/D0	H_CTL	O	1	Control H Pulse	C-MOS	PU
89	P107/AN5/DIGR2	E0-LEAK	I	1	E0 LEAK Detection	C-MOS	PD
90	P106/AN4/DIGG2		O	-	Not used.(L output)	C-MOS	OPEN
91	P105/AN3/DIGB2	AFT_MAIN	I	-	AFT voltage input for tuning in.	C-MOS	PU
92	P104/AN2	KEY B	I	-	Main unit key input.	Nch-OD	PU
93	P103/AN1	KEY A	I	-	Main unit key input.	Nch-OD	PU
94	P102/AN0	X-RAY	I	1	X-RAY Detection	Nch-OD	PD
95	VHOLD2	VHOLD2	I	-	Condenser of slicer.	-	PD
96	HLF2	HLF2	O	-	Filter of slicer.	-	PD
97	CVin2	CVIN2	I	-	Not used.	-	PU
98	TVSETB	TVSETB	I	-	It connects it with VSS.	-	VSS
99	VCCE	VCC(5V)	Power supply	-	5V	-	-
100	CVin1	CVIN_MAIN	I	-	Video signal input	-	-

SEMICONDUCTOR BASE CONNECTIONS

DIODE

RD47FBD-3
1SS133T-77
AU02A-EIC
DSS-272M-S00B
ERD07-15L50
FE201-6L49
MTZJ10B-EIC
MTZJ15B-EIC
MTZJ18B-EIC
MTZJ2.2B-EIC
MTZJ3.3B-EIC
MTZJ3.9B-EIC
MTZJ33B-EIC
MTZJ5.6B-EIC
MTZJ6.2B-EIC
MTZJ8.2B-EIC
MTZJ9.1B-EIC

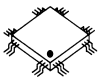
1N4002-PAN
1N4937-PAN

1N4005-EIC
21DQ09N-TA2B1
RM11C-EIC
SB140-EIC

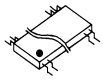
RB085T-40

ENE271D-10A

IC



CAS-220/CS
LA76327M-MPB-E



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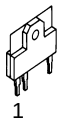
NJM2750M(TE1)

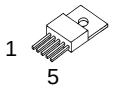
CS4345-CZZ

AT24C128N-10SU-1.8
TC7W66FU(TE12L,F)

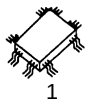
PST3229NR



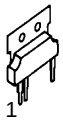
LA7847-E



BA7810T-V5



OEC7144A



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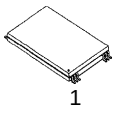
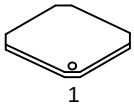


SST39VF1681-70-4C-EKE

TRANSISTOR

PS2561AL1-1-V(W)



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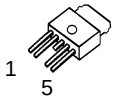

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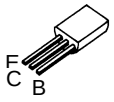
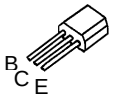
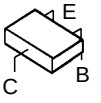


2SA1371(D,E)-AE
2SC2909(S,T)-AA
KTA1266-AT(Y,GR)
KTA1271_Y-AT



KTC3198-AT(Y,GR)
KTC3199_Y-AT
KTC3203_Y-AT
KTC3209_Y-AT
KTC3227_Y-AT



2SC3841-T1B_T63
KRA102SRTK
KRC102SRTK
KRC103SRTK
KRC104SRTK
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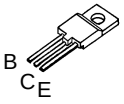
KTC3875S_Y_RTK
KTC4075E-Y-RTK/P



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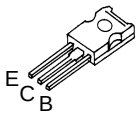
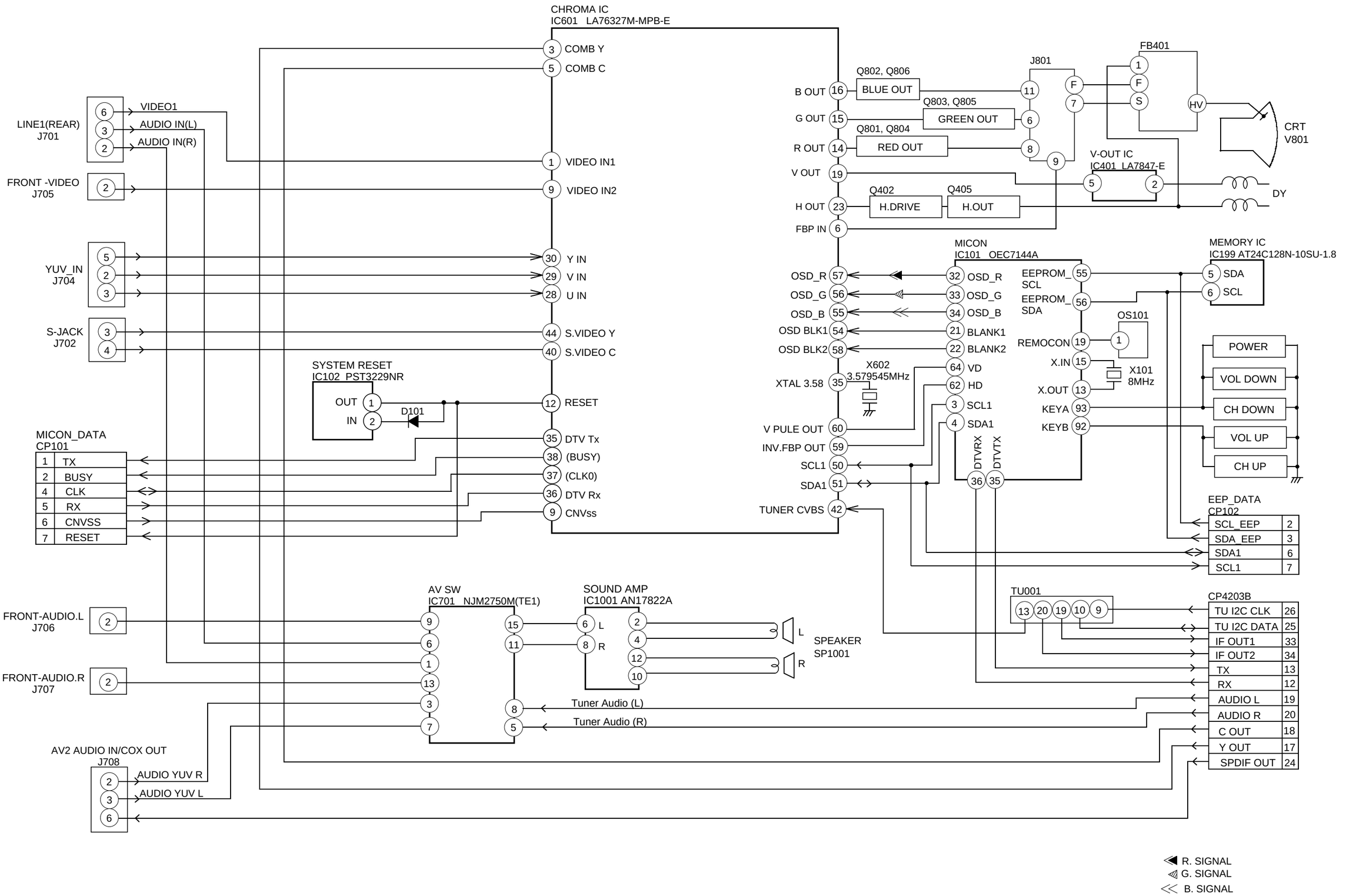


KTC4217(O,Y)

MICON/CHROMA BLOCK DIAGRAM



SD DIGITAL MODULE BLOCK DIAGRAM